

IN THE CLAIMS:

Please amend claim, 11 and add new claims 40 and 41, as shown in the complete list of claims that is presented below.

1. (previously presented) A print medium quality adjustment system comprising an inspection watermark medium output device that outputs an inspection watermark medium to be used to inspect a print medium; and a watermark quality inspection device that inspects the quality of a watermark in the print medium, wherein:

a. the inspection watermark medium output device includes

(1) an inspection watermark signal generation unit that

generates a single inspection watermark signal or a plurality of inspection watermark signals, to be used for inspection,

generates a watermark signal image by disposing the inspection watermark signal(s) in an arbitrary arrangement, and

generates inspection training data having N-dimensionally encoded data indicating a numerical value, which are obtained by digitizing the inspection watermark signal(s), N being a positive integer equal to or greater than 2; and

(2) an inspection medium output unit that outputs an inspection watermark medium to be used for inspection, created by printing the inspection watermark signal(s) onto a medium; and

b. the watermark quality inspection device includes:

(1) an input unit that takes in the inspection watermark medium as a multi-value gradation input image;

(2) a signal detection unit that detects a signal embedded in the input image and extracts embedded watermark information from the signal;

(3) a print quality judgment unit that judges watermark quality by comparing the watermark information with the inspection training data input thereto; and

(4) a print adjustment value output unit that outputs, based upon the results of the quality judgment, a print adjustment value to be used to improve the print quality.

2. (original) A print medium quality adjustment system according to claim 1, further comprising:

an adjusted watermark medium output device that outputs an adjusted print medium based upon the print adjustment value input thereto, wherein:

the adjusted watermark medium output device includes;

a document image generation unit that creates a document image printed on a medium based upon document data;

a watermark information generation unit that N-dimensionally (N is a value equal to or greater than 2) encodes data indicating a numerical value, which are obtained by digitizing embed information to the embedded in a medium as a watermark signal;

a print adjustment value input unit to which the print adjustment value is input;

an adjusted watermark image generation unit that generates a watermark image based upon the document image and the watermark information by using the print adjustment value; and

a medium output unit that outputs an adjusted watermark medium created by printing the watermark image onto a medium.

3. (original) A print medium quality adjustment system according to claim 1, wherein:

the print adjustment value output unit determines an adjustment value, which is dependent on the position assumed at the print medium, in correspondence to the difference between the inspection training data and the watermark signal detected by the signal detection unit and then output the adjustment value thus determined as the print adjustment value.

4. (original) A print medium quality adjustment system according to claim 3, wherein:
the inspection training data are obtained by using at least part of the watermark information.
5. (original) A print medium quality adjustment system according to claim 4, wherein:
the print quality judgment unit divides adjustment values, each determined in correspondence to a specific position at the print medium, into groups each representing one of an arbitrary number of areas, sets an area with an adjustment value equal to or greater than a predetermined threshold value as a high-error area and designates the high-error area as a dummy watermark area with no information contained therein.
6. (original) A print medium quality adjustment system according to claim 4, wherein:
the inspection watermark medium output device generates a plurality of inspection watermark signals; and
the print adjustment value output unit determines the print medium position-dependent adjustment value by executing tabulation processing on the plurality of inspection watermark signals.
7. (original) A print medium quality adjustment system according to claim 3, wherein:
the adjusted watermark medium output device is connected with the inspection watermark medium output device and the watermark quality inspection device so as to receive at least the watermark image via the network.
8. (original) A print medium quality adjustment system according to claim 7, wherein:
the adjusted watermark medium output device also receives the print adjustment value via the network.
9. (original) A print medium quality adjustment system according to claim 1, wherein:

the inspection watermark signal generation unit embeds characteristics information indicating document image characteristics needed for tampering detection processing as the inspection watermark.

10. (original) A print medium quality adjustment system according to claim 2, wherein:

the print adjustment value output unit outputs as the print adjustment value a watermark printing parameter that satisfies a predetermined allowable recognition error rate by adopting a character recognition technology.

11. (currently amended) A print medium quality adjustment system according to claim 1, wherein:

the inspection watermark signal includes a plurality of signals that specify different dot arrangements. ~~from one another provided to express identical information.~~

12. (original) A print medium quality adjustment system according to claim 1, wherein:

a printing parameter of the inspection watermark signal is determined based upon a change in the print density value for the watermark signal image.

13. (original) A print medium quality adjustment system according to claim 1, wherein:

a printing parameter of the inspection watermark signal is determined based upon a change in the arrangement of pixels constituting the watermark signal image.

Claims 14-19 (cancelled).

20. (previously presented) A watermark quality inspection device that inspects a watermark quality of a watermark in a print medium by using an inspection watermark medium and inspection training data input thereto, comprising:

an input unit that takes in the inspection watermark medium as a multi-value gradation input image;

a signal detection unit that detects a signal embedded in the input image and extracts embedded watermark information from the signal;

a print quality judgment unit that judges the watermark quality by comparing the watermark information with the inspection training data input thereto; and

a print adjustment value output unit that outputs, based upon the results of the quality judgment, a print adjustment value to be used to improve the print quality, wherein:

the inspection training data is obtained by N-dimensionally encoding data indicating a numerical value, which are obtained by digitizing a single inspection watermark signal or a plurality of inspection watermark signals, N being a positive integer equal to or greater than 2, and

the inspection watermark medium is a medium with the inspection watermark signal(s) printed thereon.

21. (original) A watermark quality inspection device according to claim 20, wherein:

the print adjustment value output unit determines an adjustment value, which is dependent on the position assumed at the print medium, in correspondence to the difference between the inspection training data and the watermark signal detected by the signal detection unit and then output the adjustment value thus determined as the print adjustment value.

22. (original) A watermark quality inspection device according to claim 21, wherein:

the inspection training data are obtained by using at least part of the watermark information.

23. (original) A watermark quality inspection device according to claim 21, wherein:

the print quality judgment unit divides adjustment values, each determined in correspondence to a specific position at the print medium, into groups each representing one of an arbitrary number of areas, sets an area with an adjustment value equal to or greater than a predetermined threshold value as a high-error area and designates the high-error area as a dummy watermark area with no information contained therein.

24. (original) A watermark quality inspection device according to claim 21, wherein:
the inspection watermark medium output device generates a plurality of inspection watermark signals; and
the print adjustment value output unit determines the print medium position-dependent adjustment value by executing tabulation processing on the plurality of inspection watermark signals.
25. (original) A watermark quality inspection device according to claim 20, wherein:
the print adjustment value output unit outputs as the print adjustment value a watermark printing parameter that satisfies a predetermined allowable recognition error rate by adopting a character recognition technology.

Claims 26-39 (cancelled).

40. (new) A print medium quality adjustment system according to claim 1, wherein the inspection training data are electrical data that the inspection watermark signal generation unit obtains from the inspection watermark signal(s) entirely electrically, without a printing step.
41. (new) A watermark quality inspection device according to claim 20, wherein the inspection training data are electrical data that are obtained from the single inspection watermark signal or plurality of inspection watermark signals entirely electrically, without a printing step.